

**PATENT****IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Appellant:	Anthony L. Priborsky; Robert B. Wood	Confirmation No.	8554
Serial No.:	10/608,252		
Filed:	June 27, 2003	Customer No.:	28863
Examiner:	Horace L. Flourmoy		
Group Art Unit:	2189		
Docket No.:	1081-075US01/STL11196		
Title:	<u>ASSIGNMENT OF QUEUE EXECUTION MODES USING TAG VALUES</u>		

**APPEAL BRIEF**

Mail Stop Appeal Brief - Patents  
Commissioner for Patents  
P.O. Box 1450,  
Alexandria, VA 22313

Dear Sir:

This is an Appeal Brief responsive to the Office Action mailed October 3, 2006. The Notice of Appeal was filed on March 5, 2007, with a one-month extension of time. Appellant also filed a Pre-Appeal Brief Request for Review with the Notice of Appeal. The Panel Decision from the Pre-Appeal Brief Review was mailed May 4, 2007. In accordance with procedures of the Pre-Appeal Brief Conference Pilot Program, the due date for this Appeal Brief, as extended one month, is July 4, 2007.<sup>1</sup>

Please charge Deposit Account No. 50-1778 in the amount of \$620.00, which includes Appellant's one-month extension of time fee as well as Appellant's appeal brief fee, as required by 37 C.F.R. §41.37(a)(2).

Please charge any additional fees that may be required or credit any overpayment to Deposit Account No. 50-1778.

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<sup>1</sup> New Pre-Appeal Brief Conference Pilot Program, 1296 Off. Gaz. Pat. Office 67 (July 12, 2005).

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### **REAL PARTY IN INTEREST**

The real party in interest is Seagate Technology, LLC, of Scotts Valley, California.

### **RELATED APPEALS AND INTERFERENCES**

There are no related appeals or interferences.

### **STATUS OF CLAIMS**

Claims 1, 3, 5, 7, 9-11, and 18-24 are on appeal in this case.

Claims 1, 3, 5, 7, 9-11, and 18 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Larson (US 6,321,233) in view of Chan et al. (US 5,822,772).

Claim 19 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Larson and Chan and in further view of Snyder, II (US 6,189,083).

Claim 20 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Larson and Chan and in further view of Ng (US 5,341,351).

Claim 21 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Larson and Chan and in further view of Hoang et al. (US 6,026,469).

Claims 22 and 23 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Larson and Chan and in further view of Zuravleff et al. (US 5,737,547)).

Claim 24 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Larson and Chan and in further view of Morrow (USPN 2003/0046472).

Claims 2, 4, 6, 8, 12-15 and 25-26 stand objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 2, 4, 6, 8, 12-15 and 25-26 are not on appeal.

Claims 16 and 17 stand allowable in their current form. Claims 16 and 17 are not on appeal.

### **STATUS OF AMENDMENTS**

The claims on appeal are those submitted in the Amendment filed on January 3, 2007 in response to the Final Office Action mailed October 3, 2006. These Amendments were entered by the Examiner as acknowledged in the Advisory Action mailed February 5, 2007.

### **SUMMARY OF CLAIMED SUBJECT MATTER**

The claims on appeal include two independent claims: claim 1, which is directed to a method, and claim 18, which is directed to an electromechanical device.<sup>2</sup> Claims 3, 5, 7, 9-11 are dependent on claim 1, whereas claims 19-24 are dependent on claim 18.<sup>3</sup> None of the claims on appeal include a means plus function or step plus function as permitted by 35 U.S.C. 112, sixth paragraph.<sup>4</sup>

More specifically, the method of claim 1 includes assigning a unique tag for each of several data access commands.<sup>5</sup> A tag is a scalar identifier, typically a one-byte binary value of several bits.<sup>6</sup>

Claim 1 also requires designating which of a plurality of queue execution modes to use for a selected one of the data access commands based on the selected command's tag.<sup>7</sup> A queue execution mode specifies how but not where the queued commands are to be executed.<sup>8</sup> For example, a queue execution mode can be a simple binary queue number, but not if the number merely refers to a less-busy one of several queues that are otherwise identical in how they process commands.<sup>9</sup> Within a given queue all pending commands have equal priority, and they may thus be completed in a different order than that in which the host transmits them.<sup>10</sup>

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<sup>2</sup> See claims 1 and 18.

<sup>3</sup> See claims 3, 5, 7, 9-11, and 19-24.

<sup>4</sup> See claims 1, 3, 5, 7, 9-11, and 18-24.

<sup>5</sup> See Application, e.g., FIG. 1, page 6, lines 11-12, and page 1, lines 14-25.

<sup>6</sup> See Application, e.g., page 6, lines 5-6.

<sup>7</sup> See Application, e.g., FIG. 1 and page 6, lines 12-13.

<sup>8</sup> See Application, e.g., page 6, lines 6-7.

<sup>9</sup> See Application, e.g., page 6, lines 7-9.

<sup>10</sup> See Application, e.g., at page 10, lines 1-2.

Appellant's invention as recited by claim 18 is directed to an electromechanical device comprising one or more data storage disc(s),<sup>11</sup> a memory configured to hold several pending commands for accessing the disc(s),<sup>12</sup> each of the commands having a unique tag,<sup>13</sup> and a controller configured to determine which of a plurality of queue execution modes<sup>14</sup> to use for a selected one of the pending commands based on the selected command's tag.<sup>15</sup>

### **GROUND OF REJECTION TO BE REVIEWED ON APPEAL**

Appellant submits the following grounds of rejection to be reviewed on Appeal:

- (1) The first ground of rejection to be reviewed is the rejection of claims 1, 3, 5, 7, 9-11, and 18 under 35 U.S.C. 103(a) as being unpatentable over Larson (US 6,321,233) in view of Chan et al. (US 5,822,772).
- (2) The second ground of rejection to be reviewed is the rejection of claim 19 under 35 U.S.C. 103(a) as being unpatentable over Larson and Chan and in further view of Snyder, II (US 6,189,083).
- (3) The third ground of rejection to be reviewed is the rejection of claim 20 under 35 U.S.C. 103(a) as being unpatentable over Larson and Chan and in further view of Ng (US 5,341,351).
- (4) The fourth ground of rejection to be reviewed is the rejection of claim 21 under 35 U.S.C. 103(a) as being unpatentable over Larson and Chan and in further view of Hoang et al. (US 6,026,469).

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<sup>11</sup> See Application, e.g., FIG. 2 and page 6, lines 18-22.

<sup>12</sup> See Application, e.g., FIG. 4 and page 9, line 28- page 10, line 29.

<sup>13</sup> See Application, e.g., page 6, lines 5-6.

<sup>14</sup> See Application, e.g., page 6, lines 6-7.

<sup>15</sup> See Application, e.g., FIG. 6 and page 11, line 13 – page 11.

(5) The fifth ground of rejection to be reviewed is the rejection of claims 22 and 23 under 35 U.S.C. 103(a) as being unpatentable over Larson and Chan and in further view of Zuravleff et al. (US 5,737,547)).

(6) The sixth ground of rejection to be reviewed is the rejection of claim 24 under 35 U.S.C. 103(a) as being unpatentable over Larson and Chan and in further view of Morrow (USPN 2003/0046472).

### **ARGUMENT**

In the current Office Action, the Examiner rejected claims 1, 3, 5, 7, 9, 10, 11, and 18 under 35 U.S.C. 103(a) as being unpatentable over Larson (US 6,321,233) in view of Chan et al. (US 5,822,772). The Examiner also rejected claim 19 under 35 U.S.C. 103(a) as being unpatentable over Larson in view of Chan and in further view of Snyder, II (US 6,189,083), claim 20 over Larson in view of Chan and in further view of Ng (US 5,341,351), claim 21 over Larson in view of Chan and in further view of Hoang et al. (US 6,026,469), claims 22 and 23 over Larson in view of Chan and in further view of Zuravleff et al. (US 5,737,547) and claim 24 over Larson in view of Chan and in further view of Morrow (USPN 2003/0046472).

Appellant respectfully traverses the rejections, and requests reversal by the Board of Patent Appeals. The applied references fail to disclose or suggest features of Appellant's claims.

### **FIRST GROUND OF REJECTION UNDER APPEAL**

#### ***GROUP 1 - (Claims 1, 3, 5, 7, 9-11)***

Appellant's independent claim 1 recites a method comprising (a) assigning a unique tag for each of several data access commands, and (b) designating which of a plurality of queue execution modes to use for a selected one of the data access commands based on the selected command's tag.

Claims 1, 3, 5, 7 and 9-11 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Larson in view of Chan et al.

In the current Office Action, the Examiner argued that Larson teaches a unique tag (age tags) for each of several disc access commands. The Examiner further argued that Larson also teaches how these age tags designate a particular "queue execution mode".<sup>16</sup>

However, in contrast to the Examiner's assertion, Larson does not teach designating which of a plurality of queue execution modes to use for a selected one of the data access commands based on the selected command's tag. A queue execution mode

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<sup>16</sup> Final Office Action, mailed October 3, 2006, page 3.

specifies how but not where the queued commands are to be executed.<sup>17</sup> FIG. 4 of Larson shows that the separation of requests into separate inputs: “read requests (in)” and “write requests (in)”, occurs before age tags are created in write age FIFOs 66 and 68. Because read and write commands are already separate by the time age tags are created, the age tags could not possibly designate which of a plurality of queue execution modes to use for a selected one of the data access commands based on the selected command’s tag as claimed. Instead, as taught by Larson, the location of a data access command, not an age tag, is used to designate whether a command in a read command or a write command.

While the Examiner indicated that Larson at column 9, lines 64-67 and column 10, lines 1-5 discloses designating which of a plurality of queue execution modes to use for a selected one of the data access commands based on the selected command’s tag, this characterization of Larson is conclusory and not supported by logic or evidence. In column 9, lines 64-67 and column 10, lines 1-5, Larson merely discloses the use of a tag to determine “the relative age of the pending read and write requests.” This portion of Larson does not overcome the fact that to the extent Larson differentiates between read tags and write read and write requests and associated age tags, the locations of the requests, not age tags are used. Importantly, Larson fails to provide any indication that age tags may be used to designate which of a plurality of queue execution modes to use.

The Examiner has not asserted that Chan discloses or suggests designating which of a plurality of queue execution modes to use for a selected one of the data access commands based on the selected command’s tag. Indeed, Appellant finds no disclosure regarding such a feature in Chan.

Because Larson and Chan individually and collectively fail to disclose or suggest designating which of a plurality of queue execution modes to use for a selected one of the data access commands based on the selected command’s tag, the combination of Larson and Chan would not have made the subject matter of claim 1 obvious at the time of the Appellant’s invention.

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<sup>17</sup> See Application, e.g., page 6, lines 6-7.



Dependent claims 3, 5, 7, 9, 10 and 11 are patentable over the applied references for at least the reasons independent claim 1 is allowable over the applied references. For these reasons, the rejection of claims 1, 3, 5, 7, 9-11 is improper and should be reversed.

***GROUP 2 - (Claim 18)***

Independent claim 18 recites an electromechanical device comprising “one or more data storage disc(s), a memory configured to hold several pending commands for accessing the disc(s), each of the commands having a unique tag and a controller configured to determine which of a plurality of queue execution modes to use for a selected one of the pending data access commands based on the selected command’s tag.”

Claim 18 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Larson in view of Chan et al.

Larson and Chan fail to teach or suggest a controller configured to determine which of a plurality of queue execution modes to use for a selected one of the pending data access commands based on the selected command’s tag. For example, in contrast to the invention as recited in claim 18, Larson discloses distinguishing between read and write requests prior to assigning an age tag to a request.

The Examiner has not asserted that Chan discloses or suggests designating which of a controller configured to determine which of a plurality of queue execution modes to use for a selected one of the pending commands based on the selected command’s tag. Indeed, Appellant finds no disclosure regarding such a feature in Chan.

Because Larson and Chan individually and collectively fail to disclose or suggest a controller configured to determine which of a plurality of queue execution modes to use for a selected one of the pending commands based on the selected command’s tag, the combination of Larson and Chan would not have made the subject matter of claim 18 obvious at the time of the Appellant’s invention.

For these reasons, the rejection of claim 18 is improper and should be reversed.

## **SECOND GROUND OF REJECTION UNDER APPEAL**

### ***GROUP 3 - (Claim 19)***

Claim 19 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Larson and Chan and in further view of Snyder, II.

Claim 19 is dependent on claim 18 and recites, “the electromechanical device of claim 18 in which the memory is configured to hold the tag as a binary value no larger than one byte.”

As discussed with respect to Group 2, above, Larson and Chan individually and collectively fail to disclose or suggest a controller configured to determine which of a plurality of queue execution modes to use for a selected one of the pending commands based on the selected command's tag. In the rejection of claim 19, the Examiner has not asserted that Snyder, II discloses or suggests designating which of a plurality of queue execution modes to use for a selected one of the data access commands based on the selected command's tag. Indeed, Appellant finds no disclosure regarding such a feature in Snyder, II.

For these reasons, the rejection of claim 19 is improper and should be reversed.

## **THIRD GROUND OF REJECTION UNDER APPEAL**

### ***GROUP 4 - (Claim 20)***

Claim 20 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Larson and Chan and in further view of Ng.

Claim 20 is dependent on claim 18 and recites, “the electromechanical device of claim 18, further including an actuator having a nominal seek time longer than 1 millisecond.”

As discussed with respect to Group 2, above, Larson and Chan individually and collectively fail to disclose or suggest a controller configured to determine which of a plurality of queue execution modes to use for a selected one of the pending commands based on the selected command's tag. In the rejection of claim 20, the Examiner has not asserted that Ng discloses or suggests designating which of a plurality of queue execution

modes to use for a selected one of the data access commands based on the selected command's tag. Indeed, Appellant finds no disclosure regarding such a feature in Ng.

For these reasons, the rejection of claim 20 is improper and should be reversed.

#### **FORTH GROUND OF REJECTION UNDER APPEAL**

##### ***GROUP 5 - (Claim 21)***

Claim 21 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Larson and Chan and in further view of Hoang et al.

Claim 21 is dependent on claim 18 and recites, "the electromechanical device of claim 18 in which the memory includes a multiple-bit state register configured to identify one or more other tags that are available for a future command."

As discussed with respect to Group 2, above, Larson and Chan individually and collectively fail to disclose or suggest a controller configured to determine which of a plurality of queue execution modes to use for a selected one of the pending commands based on the selected command's tag. In the rejection of claim 21, the Examiner has not asserted that Hoang et al. discloses or suggests designating which of a plurality of queue execution modes to use for a selected one of the data access commands based on the selected command's tag. Indeed, Appellant finds no disclosure regarding such a feature in Hoang et al.

For these reasons, the rejection of claim 21 is improper and should be reversed.

#### **FIFTH GROUND OF REJECTION UNDER APPEAL**

##### ***GROUP 6 - (Claims 22 and 23)***

Claims 22 and 23 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Larson and Chan and in further view of Zuravleff et al.

Claim 22 is dependent on claim 18 and recites, "the electromechanical device of claim 18 in which the queue execution modes include a higher-priority mode associated with a first queue and a lower-priority mode associated with a second queue."

As discussed with respect to Group 2, above, Larson and Chan individually and collectively fail to disclose or suggest a controller configured to determine which of a

plurality of queue execution modes to use for a selected one of the pending commands based on the selected command's tag. In the rejection of claim 22, the Examiner has not asserted that Zuravleff et al. discloses or suggests designating which of a plurality of queue execution modes to use for a selected one of the data access commands based on the selected command's tag. Indeed, Appellant finds no disclosure regarding such a feature in Zuravleff et al.

Dependent claim 23 is patentable over the applied references for at least the reasons claim 22 is allowable over the applied references. For these reasons, the rejection of claims 22 and 23 is improper and should be reversed.

### **SIXTH GROUND OF REJECTION UNDER APPEAL**

#### ***GROUP 7 - (Claim 24)***

Claim 24 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Larson and Chan and in further view of Morrow.

Claim 24 is dependent on claim 18 and recites, "the electromechanical device of claim 18 in which the controller is operatively coupled to communicate with a host through a serial ATA bus."

As discussed with respect to Group 2, above, Larson and Chan individually and collectively fail to disclose or suggest a controller configured to determine which of a plurality of queue execution modes to use for a selected one of the pending commands based on the selected command's tag. In the rejection of claim 24, the Examiner has not asserted that Morrow discloses or suggests designating which of a plurality of queue execution modes to use for a selected one of the data access commands based on the selected command's tag. Indeed, Appellant finds no disclosure regarding such a feature in Morrow.

For these reasons, the rejection of claim 24 is improper and should be reversed.

### CONCLUSION OF ARGUMENT

Claims 1, 3, 5, 7, 9, 10, 11 are patentable for the arguments presented for Group 1. Claim 18 is patentable for the arguments presented for Group 2. Group 3 (claim 19) is patentable for the same reasons as Group 2, and is patentable for additional reasons addressed above. Group 4 (claim 20) is patentable for the same reasons as Group 2, and is patentable for additional reasons addressed above. Group 5 (claim 21) is patentable for the same reasons as Group 2, and is patentable for additional reasons addressed above. Group 6 (claims 22 and 23) is patentable for the same reasons as Group 2, and is patentable for additional reasons addressed above. Group 7 (claim 24) is patentable for the same reasons as Group 2, and is patentable for additional reasons addressed above. Accordingly, the different groups do not necessarily stand or fall together.

Appellant requests that the Examiner's rejections be reversed, and that all of the claims on appeal be allowed.

Respectfully submitted,

Date:

By:

July 5, 2007

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### **CLAIMS APPENDIX**

**Claim 1 (Previously Presented):** A method comprising steps of:

- (a) assigning a unique tag for each of several data access commands; and
- (b) designating which of a plurality of queue execution modes to use for a selected one of the data access commands based on the selected command's tag.

**Claim 3 (Original):** The method of claim 1, further comprising a step of establishing a contiguous range of tags that includes the selected command's tag, the contiguous range corresponding to the mode to be designated in the designating step (b).

**Claim 5 (Original):** The method of claim 1, further comprising steps of:

- (c) associating one of the queue execution modes with a first queue;
- (d) associating another of the queue execution modes with a second queue; and
- (e) performing an operation that affects at least one command in the first queue without affecting a command that is in the second queue.

**Claim 7 (Previously Presented):** The method of claim 1, further comprising a step (c) of redefining a queue execution mode that is associated with at least one tag while the at least one tag is not assigned to any data access command.

**Claim 9 (Original):** The method of claim 1, further comprising a step (c) of using at least one of the queue execution modes to transfer video data through a transducer adjacent to a data storage disc.

**Claim 10 (Previously Presented):** The method of claim 9 in which the designating step (b) includes a step (b1) of determining whether to use a sequential delivery mode for the selected data access command.

**Claim 11 (Previously Presented):** The method of claim 1 in which the designating step (b) includes a step (b1) of determining whether to use a sequential delivery mode for the selected data access command.

**Claim 18 (Previously Presented):** An electromechanical device comprising:  
one or more data storage disc(s);  
a memory configured to hold several pending commands for accessing the disc(s),  
each of the commands having a unique tag; and  
a controller configured to determine which of a plurality of queue execution modes to use for a selected one of the pending commands based on the selected command's tag.

**Claim 19 (Original):** The electromechanical device of claim 18 in which the memory is configured to hold the tag as a binary value no larger than one byte.

**Claim 20 (Original):** The electromechanical device of claim 18, further including an actuator having a nominal seek time longer than 1 millisecond.

**Claim 21 (Original):** The electromechanical device of claim 18 in which the memory includes a multiple-bit state register configured to identify one or more other tags that are available for a future command.

**Claim 22 (Original):** The electromechanical device of claim 18 in which the queue execution modes include a higher-priority mode associated with a first queue and a lower-priority mode associated with a second queue.

**Claim 23 (Original):** The electromechanical device of claim 22 in which the first queue is associated with a total of M tags, in which the second mode is associated with a total of N tags, and in which  $N > 0$  and  $M > 0$ .

**Claim 24 (Original):** The electromechanical device of claim 18 in which the controller is operatively coupled to communicate with a host through a serial ATA bus.



**EVIDENCE APPENDIX**

NONE

**RELATED PROCEEDINGS APPENDIX**

NONE